PURCHASING PRODUCT-SERVICE BUNDLES IN VALUE NETWORKS - EXPLORING THE ROLE OF SCOR

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Abstract

The implementation of electronic procurement processes for product-service bundles, consisting of product- and service components requires a consideration of strategic, tactical and operational procurement and information and communication technologies in value networks. In the past, the scientific discussion oriented on traditional procurement processes for products and technology-solutions. Increasingly, the design of hybrid procurement processes in value networks is of scientific interest. The combination of different procurement processes for products and services, however, includes problems. This paper shows the need for a process-oriented approach in procurement at several abstraction levels. We describe a model for the design of the electronic procurement process in value networks to serve product-service bundles. Different process characteristics are investigated for the applicability of product-service bundles and SCOR. We adjust a proposal for the procurement process in value networks.

Keywords: Value Network, Reference Modelling, Conceptual Modelling, SCOR, Value Bundle.
1 Motivation

Global market scenarios lead to the fact that offers are easily comparable. This applies in the range of offers of production enterprise as well as from service enterprise. In such comparable offer situations a price leadership is often the key to win shares of the market. The enterprises which achieve market shares mainly through price leadership have less strategic developing elbowroom. A strategically significant possibility to differentiate towards the competitor in comparable markets is the offering of value bundles (Burr 2002). Besides, value bundles put an integrated combination of physical products and immaterial services with a focus on solving a specific customer problem (Hirschheim et al. 1995). Value networks exist of several suppliers independent of each other from which one of these suppliers is designated as focal supplier. The focal supplier is the supplier who creates the offer of the customers. The focal supplier organizes all aspects of the value bundle in the value network. In spite to the complexity of organizing value networks the advantage of this organization form in offering value bundles is huge: The main attention on this organization form lies in the connection of commercial processes and, hence, displays a valuable method to organize value bundles. If one looks at high integrated value bundles, delivering such offers occurs within the scope of a service process which is integrated seamlessly into the relevant customer processes.

Current research results show that the management of value bundles leads established commercial processes to new challenges in information systems. Thus value bundles can be managed only insufficiently in commercial processes as for example supply chain management. The research in the range of the hybrid added value concentrates upon models and methods of the construction of such solutions. The discussion about the behaviour of value bundles in value networks is still pending.

The central research question for the present article is: How is a supply management process modelled for the procurement of product-service bundles in value networks. The article is structured as follows: in the second chapter the current research state is displayed to the subjects supply networks, strategic procurement, value bundles and the modelling of strategic supply networks. In chapter 3 existing models are evaluated. Based on the results of this evaluation a reference model which describes a development of strategic value network for value bundles is introduced in chapter 4. Further, in chapter 4 the reference model is applied in a typical use case. Chapter 5 gives a summary and indicates future research need.

This paper basically follows the design science paradigm for design-oriented research (Fettke 2007; Peffers et al. 2008). The identification of existing procurement processes is the result of a systematically literature review-process. Based on existing reference models and processes for procurement management, a new process model by combine and expand of existing models is developed (Rosenmann 1996). The new process model has been validated in a use case.

2 Current research state

In the following section, first the current state of research on product-service bundles and value-added networks is presented for supply chain management. According the procurement-process comparison for products and services, critical process steps are derived.

2.1 Service package and value bundle configuration

For a long time, procurement was considered exclusively as an in intra-company executive organ which had to fulfill production-political and distribution-political decisions (Arnold and Essig 2000; Kaufmann 2001). Today, however, the high strategic importance of the procurement function is widely recognized in practice and science (Kaufmann 2001; Holbach 2002; Krampf 2000). This is reflected especially in the consideration of the order volume which the procurement function is responsible for
and justifies the key role within a company. The strategic procurement as a part of the entire procurement function has as a major task the analysis and goal-oriented creation respectively influencing of sourcing-relevant factors (Roland 1993; Large 2006). These factors can be classified in three areas: market, suppliers, and the company itself (Roland 1993). In current literature, a multitude of contributions for the strategic sourcing of products or services can be found. But as the economic importance of pure products and services tends to decrease because of lacking differentiation, combinations of physical products and services being offered as bundles become more and more important in the industry. These combinations are called value bundles and are a combination of physical products, services as well as immaterial values as for example guarantees. These combinations are specially tailored to solve an individual customer problem (Hirschheim et al. 1995). Value bundles can be segmented in standardized physical products, standardized services as well as customized product and customized services (fig. 1). The division of these four elements is not dichotomous, but the transitions between these elements are linear in the sense that there are several possibilities to combine these elements to a value bundle.

Integration is a key component of value bundles. This integration means not only the bundling of products and services for the purpose of a combined solution, but also the process integration on customer and supplier side (Becker et al. 2006). The degree of integration between services in kind and services is variable (Fettke 2007) and has a direct impact on the services. With a high degree of integration between the two units the provision of the service component is strongly dependent on the service in kind component. These highly integrated value bundles are often offered to customers as service agreements and from a customer view it is not possible to separate the services in kind from the services (fig. 1).

Figure 1. Types of value bundles and bundle integration in a product line

The customer orientated creation of value bundles offer companies the possibility of diversification and lead them to significant market advantages. But it also represents new challenges for the subprocesses along the value chain. A key design feature of hybrid value-added process is the formation of network structures. Reiss and Präuer (Reiss and Präuer 2001) show in an empirical study, that the cooperative organizational forms, such as strategic value-added partnerships, networks and cross-company project-orientated cooperation are the most suitable organization forms to offer value bundles. Because of the high dynamic customer orientated variations of value bundles they cannot produce as bulk goods so the network must be created by the offering company at the beginning of the manufacturing process. But this means also that a value-added network might not be used for another value bundle. The cooperating companies have to join forces in dynamic networks that can be configured according to requirements of a specific value bundle at its added-value processes (fig. 2).
2.2 E-Procurement in value networks

In the previous section the term `product service bundles` in value networks was explained. This section describes the electronic procurement in value networks. Based on the fundamentals of electronic procurement, opportunities are described.

2.2.1 Electronic procurement

A major task of supply chain management is to support the traditional procurement with information technology (Alt and Puschmann 2005). E-Procurement includes all web-based processes for the procurement of goods and services and thus represents a trade perspective (Baldi and Borgman 2001).

Changing market conditions have dominated the global sourcing. The global purchase includes the company’s overall planning, management and control of material information and money flows. Companies work with these requirements in networks (Bause and Kaczmarek 2001). Value networks represent companies and their social and technical resources within and between businesses (Pibernik 2001). In a value network, a product is provided by the network. A network of suppliers spans over several tiers and communicate among each other using the internet, based on information of suppliers. Information technology supports this approach. Procurement processes are key-components in value networks. The relevance of e-procurement (Riemer and Klein 2002) can be illustrated by the multiple relationships in value networks (Fettke 2007). A product-service bundle requires cooperation of enterprises in value networks (Knackstedt et al. 2009). In order to realize the exchange of data between suppliers and service providers in value networks, increasingly standardized data exchange formats are used. Besides the efficiency improvement and cost reduction, manufacturers and distributors use the chance to exchange faster and more electronic data (Walter et al. 2010).

The use of e-procurement can reduce costs. Business processes are accelerated. The quality is improved (Buchwalter et al. 2002). Recently, the use of e-procurement in value networks has highlighted various fields (Zweck et al. 2008). Of interest are the formation of electronic value networks, the digital conversion in supply networks, the safe use of electronic markets and the regardless of product-service bundles in procurement to reduce organizational barriers between product and service providers (Zweck et al. 2008).

2.2.2 Model dimensions in procurement

For the description of the procurement process, procurement opportunities are divided into process steps. The process steps include the planning and preparation (sourcing), conducting the procurement and the control of the process (monitoring) (Eyholzer et al. 2002). The procurement objectives are differentiated according to strategic and tactical and operational components. Boundaries between the objectives overlap. The acquisition starts with the identification of needs (Eichler 2002; Eyholzer et al. 2002). Based on the requirement determination for goods and services, suppliers could be identified.
for requisition (Albani et al. 2003). The phase is supported by corporate information systems. In the strategic procurement are essentially the initiation and the agreement phase (Held 2003; Hartmann 1999). The tactical and operational procurement process includes steps, which have to do with order processing. The identification of potential transaction partners is based on concrete specifications, required in the initiation phase. The phase is supported by electronic marketplaces, product catalogues and suppliers using information and communication technology. In the agreement phase, conditions and quantities are agreed. The aim of the phase is a binding contract between the transaction partners. The implementation phase includes the operational procurement ("supply execution"). This includes the purchase steps order-entry, order monitoring, power decrease, audit and payment processing. The individual process steps are equally supported by business information systems (SAP 2010).

3 E-Procurement and SCOR

Procurement processes are discussed differently in the literature. The analysis and comparison of these processes can determine the State-of-the-Art.

3.1 Process surveying and process analysis

In literature analysis, we have collected published procurement processes. We examine articles in the literature rankings VHB-Jourqual2-listing ("Association of University Professors of Business Administration e.V.") and WKWI-listing (Speaker of the Scientific Commission of computer science) (WI-Association 2008). Articles were examined in the years 1998 to 2010. The study examined the WKWI-Rankings "A" and VHB-Jourqual2 „A“ and „B“ publications. Next, journals and conferences have been investigated by topic. We investigate journal and conference proceedings in the areas of Supply Chain Management and model or service design. In the remained publications, we searched by keyword for relevant articles.

Phrases such as "procurement process", "hybrid value creation" and "reference process", has been searched in the singular and plural, in German and English language. The searches returned no satisfactory results. The problem is that many terms have been established in the hybrid value creation. Many synonyms have already established themselves (Knackstedt et al. 2008). The academic debate on the integration of goods and services is characterized by inconsistent use of terms (Becker et al. 2008). Therefore a manual search of articles in the relevant publications was necessary. In the title and abstract, we first examined for relevant articles. Then the search was extended to monographs, to a saturation of the procurement process steps. Eleven suitable articles for this work were founded. The identified literature is appropriate for the investigation. The selection of the examined journals and conferences is named below and illustrated in Table 1. A selection of official publications from the intersection of the two above mentioned Rankings literature was searched explicitly and includes the following publications: Journal of the Association for Information Systems (JAIS), Information Systems Research, MIS Quarterly, Journal of Management Information Systems, Information Systems Journal, Journal of the Association for Information Systems (JAIS), Journal of Strategic Information Systems, IEEE Transactions on Engineering Management, Journal of the ACM JACM, Proceedings of the European Conference on Information Systems (ECIS), Decision Support Systems, ACM Transactions on Information Systems, ACM Computing Surveys. In addition, the Proceedings of the German IS conference (proceedings of information systems) were considered in the same period.

The literature encompasses a variety of procurement processes for industry and trade. Procurement processes for services are scarcely in research studies published. Identified reference models cover parts of the procurement processes in value networks. Reference processes in the electronic procurement complete the analysis. In addition, currently scientific work investigate, how to apply existing reference models in kind to services. It is examined, if procurement be adjusted for product-service bundles in value-networks. In particular, this article already has been discussed widely the supply chain management SCOR-Model (Supply Chain Operations Reference-Model) (cp. (Knack-
stedt et al. 2009)). For the present investigation, we used explicit in the following reference models, extract the purchase perspective overall. Table 1 classified relevant articles.

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Class</th>
<th>Rating</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jourqual2</td>
<td>EC; WI&amp;IS</td>
<td>A, B</td>
<td>1998 - Jun. 2010</td>
</tr>
<tr>
<td>WKWI</td>
<td>-</td>
<td>A</td>
<td>1998 - Jun. 2010</td>
</tr>
</tbody>
</table>

- *information systems conference (in addition for the same period of investigation)*

<table>
<thead>
<tr>
<th>Charakteristik</th>
<th>Article</th>
</tr>
</thead>
<tbody>
<tr>
<td>value: tangible goal of procurement; strategically/tactical and operational</td>
<td>(Eichler 2002); (Bogaschewsky 1999); (Koppelmann 2000); (Hartmann 1999); (Held 2003); (Loos and Theling 2002); (Buchwalter et al. 2002); (SCM 2010)</td>
</tr>
<tr>
<td>value: service goal of procurement; strategically/tactical and operational</td>
<td>(SAP 2010); (Münger and Eggel 2007); (ITIL 2010)</td>
</tr>
<tr>
<td>value: [materiell goods, services, product-service bundles] goal of procurement; [strategically/tactical and operational] reference model: „r”</td>
<td>(ITIL 2010)</td>
</tr>
</tbody>
</table>

*Table 1.* Distribution of analysed articles and investigated publications

### 3.2 Procurement processes for product-service bundles with SCOR

For comparison of procurement processes, the articles in Table 1 were compared systematically. The derived process serves a basis for discussion of material and immaterial procurement processes. The overall process for tangible and intangible benefits has been combined in Figure 3.

The procurement process can be classified in a strategic and a tactical part, especially in the three sub-phases initiation, agreement and transaction (Hartmann 1999). The graphical coverage of the procurement process is an attempt to determine overlaps between process-steps. Differences between the procurement of tangible and intangible benefits are identified. Basically, the procurement process for services is applicable. In essence, the processes differ in the steps of the procurement specification and acceptance of service (Münger and Eggel 2007). The difference can be attributed to the experience and methodological support. The degree of standardization in engineering in terms of physical performance is more mature than for services (Jörg Becker et al. 2008). The systematic specification of services is difficult for companies (Buckhaus et al. 2007). For example, it can be shown, that this difference in context with SCOR could not caught. For example, a service, such as receiving training services in the SCOR model is not mapped (Knackstedt et al. 2009). Within the other sub-processes, the alignment diverge low (Dietrich 2007), as shown in Figure 3. On the one hand, the difference in the procurement process between products and services is characterized graphically; the importance of hybrid product-service packages is highlighted too.

The definition of the requirements is already complex. The needs and the specification of goods and services do not arise in the departments of a company. The demand comes from the customer and cannot be standardized in a procurement document to be processed with information systems. A free-text description is possible. Product catalogs are part of an e-procurement solution and support for requirements capture. Product classifications such as UN / SPC (Standard Products and Services Classification) offer the advantage of global availability of materials and services. The use of service catalogs for product-service bundles is not yet supported by enterprise information systems in a single step. The main difference and the complexity of the procurement management between the procurement processes are considered in strategic procurement. Especially in the initial phase, the specification is complex. It is hard to find suppliers systematically in a value network. For the structured identification of suitable suppliers for the specified requirements, the focal company submits requests to the supply network. Suppliers respond to the questions. Existing and potential suppliers of Tier-1 continues in the same way (Albani et al. 2003), in the other process steps alike. Figure 4 highlights the SCOR support (vf. (Dietrich 2007)).
The procurement process for tangible and intangible products is different, also in procurement systems. The combination of both processes increases the complexity, especially in value networks.

The main differences between product- and services procurement are the steps specification and accept of service (material storage vs. service acceptance). In addition, services cannot be stored. However, this process step is operational and less complex. Electronic procurement focuses currently the integration of material and information flows. Positive effects of the integration of information on material and service flows are neglected. In addition to existing business information systems, tangible and intangible benefits in various procurement processes are detected. For the information system based procurement of product-service bundles, we modified in the following a procurement process. Design opportunities for process integration are showing.

4 Strategic sourcing model for product-service bundles

After the state of research has been documented to traditional procurement processes for tangible and intangible benefits, critical process steps were identified in particular for strategic sourcing. As follow we design recommendations for the strategic sourcing. It focuses on general investigation worked out as critical process steps for strategic sourcing for the procurement of product-service bundles in value networks. In developing a strategic sourcing process, traditional procurement process, will contribute systematically to derive design recommendations in consideration of product service bundles. Procurement processes have particular differences in the initiation and agreement phase. The extended process accesses the differences in Figure 4 and is described below for product-service bundles.

4.1 Reference Model

The procurement process begins with the individualized requirements elicitation. With increasing hybridization towards services, strong customer-supplier relationship for a given hybrid bundle of services is required. Objective of high customer interaction is to find the business benefits of a close customer relationship, the individualization process through the collection of reliable data, information and knowledge to optimize the customer. Result of the needs assessment could be a specification that
describes all the possible customer requirements (DIN 2009). The process is similar to the traditional procurement; however, affect the extent of the hybrid properties in the amount of the service level.

A part of the hybridization is decomposition. Physical, hybrid and other intangible services were derived. The aim of the hybridization is to identify systematic features for an application domain. This is done taking into account the rules for the configuration of selected services. With the assignment of benefits to performance groups (physical, hybrid or intangible) could be systematically carriers of the trait identify. The internal structure of the resulting amount variously constructed artifacts to be described in a logical and substantive issues relating to the design of product-service bundles.

The product-service conception, also design phase, corresponds to the composition of individual service components by purpose. Thus, to ensure that a hybrid product-service bundle is the choice of hybrid components custom designed along the needs assessment. Within the design phase, goods and services are brought into relationship. It is necessary to consider material and service components of differentiated. When creating services the customer is to involve more than for products (Schuh et al. 2008).

During the specification phase, product-service bundles are described in a formalized manner. The related goal is a complete, consistent and unambiguous description of the external view of the performance. The specifications cover all customer requirements at the component level. The focal company specialized for the delivery network the identified requirements. It should be noted that hybrid product-service bundles can occur in all phases of the life cycle. Thus, the specification has implications on the ordering and monitoring the performance decline. Conversely, the provider based on the composition and specification steps the need for a targeted value-added hybrid demand on the network. The needs may include service components and product components of the product-service bundle. In addition, suppliers can also be determined for product-service bundles of the network. Components and sub-components are harmonized according to purpose.

Specified components can be compensated in the step of bundling product-services (product-service composition). The contract ends with decommissioning. It is also clear that suppliers can contribute within the value network both tangible and intangible as well as hybrid components for service provision to the customer. While the distinct service components to remain opaque to the customer, various service providers are perceived by the customer. In the identification of strategic supply partners in a dynamic value network, the demand for services to existing and potential suppliers of Tier-1 is reported. According to the report's requirements due to Tier 1 supplier in turn needs to suppliers. In reverse form, the requested information is returned back, aggregated and confirmed into the value network. Therefore the value-network is total formed. Thus, the value network as a whole bears the establishment of the hybrid package of services.

The individual product creation changes the requirements for the value-added network (Becker et al. 2008). SCOR supports the process steps low (Dietrich 2007). The design of value networks can be called as a main task for the control of the tension between flexibility for the customer and stability in the value network. The process of service delivery to the customer as well as the structural and organizational performance is therefore typically between property and services components for value-added networks to separate consideration. Modeling techniques to describe hybrid product-service bundles are known for a long time in the development of tangible products can support the process. To transfer the principles to the modeling of hybrid product-service bundles in the recent past more modeling approaches have been proposed (Becker et al. 2008).

Details of supplier selection in supply networks and the implementation phase are not deepened. The traditional process steps of the agreement and settlement phase are mainly applicable to the hybrid value, as shown in Section 3.2. On the basis of the identified bundles of services are offered opportunities for a rule base. Configurable reference models contain a rule base is described in, can be represented as follows from an initial model models (Becker et al. 2008; Beverungen et al. 2008). Repeated customer requests can therefore be identified by the customer based on the package of services in the course as a subset of the original starting model based on rules configured by the customer (Becker
and Delfmann 2007). From the customer’s specific application context can be derived configurable models. The following section verifies these design-oriented paradigms in a case study for reference by a practical example.

Figure 4. Strategic sourcing of product-service bundles

4.2 Reference use-case

To check the plausibility of the proposed model, the design perspectives addressed a special case. The use case is designed in alignment with a real case from a company providing ICT solutions and is typical for procurement problems with product-service bundles in value networks. The considered application is the offer for a provider of information technology. This package is an enterprise IT workplace, which can be used as a standard workstation for common activities. The scope of this IT job includes hardware (PC, keyboard, mouse), various software packages and internet connection. Further, a customer relationship management system (CRM) with connection to a digital marketplace for the purchase-management for office supplies is integrated. In addition, the offer includes the workplace installation and the training of the employee as a service. Finally, there is a service level agreement (SLA). This allows the user by problems either to call a hotline or an on-site service. This product-service offer is agreed with the customer and sold.

The needs of the customer can be structured into the components "own production" and "procurement requirements" (Table 2).

<table>
<thead>
<tr>
<th>Needs</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>own production</td>
<td>- PC</td>
</tr>
<tr>
<td></td>
<td>- keyboard</td>
</tr>
<tr>
<td></td>
<td>- mouse</td>
</tr>
<tr>
<td>need</td>
<td>- Software Packages</td>
</tr>
<tr>
<td></td>
<td>- Internet Connection</td>
</tr>
<tr>
<td></td>
<td>- CRM-System</td>
</tr>
<tr>
<td></td>
<td>- Market Place Connection</td>
</tr>
<tr>
<td></td>
<td>- Workstation Installation</td>
</tr>
<tr>
<td></td>
<td>- Staff Training</td>
</tr>
<tr>
<td></td>
<td>- Advanced training</td>
</tr>
<tr>
<td></td>
<td>- Software licenses</td>
</tr>
<tr>
<td></td>
<td>- Service-Level-Agreement</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>product / service</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangible Component</td>
<td>- Software installation</td>
</tr>
<tr>
<td>Product / Service artifact</td>
<td>- Internet connection</td>
</tr>
<tr>
<td></td>
<td>- Workplace installation</td>
</tr>
<tr>
<td></td>
<td>- Staff training</td>
</tr>
<tr>
<td></td>
<td>- Advanced training</td>
</tr>
<tr>
<td></td>
<td>- Service-Level-Agreement</td>
</tr>
<tr>
<td>Intangible artifact</td>
<td>- CRM-System</td>
</tr>
<tr>
<td></td>
<td>- Connection to market place</td>
</tr>
<tr>
<td></td>
<td>- Software license</td>
</tr>
</tbody>
</table>

Table 2. Product-service bundle De-Composition
During the hybridization phase of the procurement, components were decomposed into individual components and sub-components. Here, a classification according to tangible, intangible and hybrid components made (Table 2). Based on supplier decision, clear division for certain components is not always possible.

In the phase of the property and design services now, the components in-kind components and service components can be distinguished (Table 3).

<table>
<thead>
<tr>
<th>Component</th>
<th>Product</th>
<th>Service</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet connection</td>
<td>+</td>
<td>+</td>
<td>Online-Service</td>
</tr>
<tr>
<td>Workplace installation</td>
<td>-</td>
<td>+</td>
<td>Local-Service</td>
</tr>
<tr>
<td>Staff training</td>
<td>-</td>
<td>+</td>
<td>Local-Service</td>
</tr>
<tr>
<td>Advanced training</td>
<td>+</td>
<td>+</td>
<td>Local-Service</td>
</tr>
<tr>
<td>Service-Level-Agreement (SLA)</td>
<td>-</td>
<td>+</td>
<td>Service-Level</td>
</tr>
</tbody>
</table>

Table 3. Conception of the product-service bundle

In the phase of specification, the procurement requirement formalized and announced. The tangible components can specify classical. Intangible components can also be clearly specified. This is done in accordance with the classical specification process for the procurement of services. The hybrid components are to be specified only in context and interaction with the client. This is documented in the specification. All components and specifications are advertised in the value network.

In the phase of the bundling of services, the deals are based on the tenders of the components takes place in the value network, tested, completed and bundled. This concentration is then combined with the shares of the manufacturer's own product, the product-service bundle that is offered to the customer. The bundling of services now depends on the heterogeneity of the suppliers, if suppliers are able to cover multiple components if there are a variety of suppliers and subcontractors in turn, take either suppliers claim to provide these services.

5 Summary

The aim of this paper is process-driven recommendations for product-service bundles in procurement management. For this purpose, SCOR as an existing reference model in supply chain management was analyzed and tested for compatibility with the requirements of the sourcing of product-service bundles in value networks. Based on this analysis, a design-proposal for the procurement of product-service bundles is modeled in addition to SCOR. It proposes five strategic sourcing process steps as a design proposal for electronic procurement in value networks. On the basis of a use case, the suitability of the new process was demonstrated. The integration of logistic aspects for the procurement processes of product-service bundles holds significant advantages for focal suppliers of hybrid value bundles over traditional procurement. There are more than reduced transaction costs. The presented design proposal is a way out for those companies that challenges the integration of product and service components but faces a lack of procurement strategy for value bundles to source hybrid value bundles from their value network.

The strategic approach to procurement has bundling effects in the design of product and service components. Offering companies are able to systematically identify product-service compositions from different integrated offerings to achieve monetary and logistic advantages. In many scenarios, such proposals are the missing component to a seamless electronic procurement process. This approach offers companies a basis for process changes that support the procurement of product-service bundles in value networks. Processes are adjusted according to the company and market dynamics.
Current and future research will examine the extent how procurement requirements are supported by business information systems. This research will give new insights to the developers of ICT systems for ERP and SCM on how to align these business requirements to ICT functionality. It will examine how the procurement-process for product-service bundles in value networks. It is exploring how existing ERP systems must be designed to implement the procurement-process for product-service bundles in value networks. It also requires an investigation to identify more specific product-service bundles and their feasibility, relevance and acceptability.

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